IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellants:	Warren M. Ewert, *et al.*	§	
		§	Group Art Unit: 1797
Serial No.	10/800,471	§	
		§	Examiner: Ellen M. McAvoy
Filed:	March 15, 2004	§	
		§	Confirmation: 3183
For:	PROCESS TO DECREASE OR ELIMINATE CORROSION FROM THE DECOMPOSITION OF HALIDE CONTAINING OLEFIN CATALYSTS	§	

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

CERTIFICATE OF EFS-WEB FILING

Pursuant to 37 C.F.R. §1.8, I hereby certify that this correspondence is being electronically submitted to the U.S. Patent and Trademark Office website, www.uspto.gov, on 8/10/10.

Edith Shek

Edith Shek

REPLY BRIEF

Dear Sirs:

This Reply Brief is filed in response to the Examiner's Answer mailed on June 10, 2010 (hereinafter the "Examiner's Answer") and in support of the appeal in the above referenced application. Appellants authorize all required fees under 37 C.F.R. § 1.17 to be charged to Deposit Account No. 50-1515, of Conley Rose, P.C. of Texas.

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I. STATUS OF CLAIMS

A. Total Number of Claims in the Application.

The number of claims in the application is: 1 3-6, 10-13, 15-18, 20-31, 35-37, 39, 41-46, and 48-65.

B. Status of All Claims in the Application.

1. Claims canceled: 2, 7-9, 14, 19, 32-34, 38, 40, and 47.
2. Claims withdrawn from consideration but not canceled: None.
3. Claims pending: 1, 3-6, 10-13, 15-18, 20-31, 35-37, 39, 41-46, and 48-65.
4. Claims allowed: None.
5. Claims rejected: 1, 3-6, 10-13, 15-18, 20-31, 35-37, 39, 41-46, and 48-65.
6. Claims neither rejected nor allowed: None.

C. Claims on Appeal.

The claims on appeal are: 1, 3-6, 10-13, 15-18, 20-31, 35-37, 39, 41-46, and 48-65.

II. STATUS OF AMENDMENTS

No amendments were filed after the May 19, 2009 Final Office Action.

III. GROUNDS FOR REJECTION TO BE REVIEWED ON APPEAL

1. Whether the Final Office Action presented a *prima facie* case of obviousness under 35 U.S.C. 103(a) over U.S. Patent 5,689,028 ("*Lashier*"), U.S. Patent 5,750,816 ("*Araki*"), or U.S. Patent 6,380,451 ("*Kreischer*") as to claims 1, 18, 37, and 57.

2. Whether claims 1, 18, 37, and 57 are unpatentable over *Lashier*, *Araki*, or *Kreischer* under 35 U.S.C. 103(a). Specifically, does *Lashier*, *Araki*, or *Kreischer* teach all the limitations of the claims?

3. Whether claim 18 is unpatentable over *Lashier*. Specifically, does *Lashier* inherently teach contacting the alcohol with an absorbent?

IV. ARGUMENT

In response to the Examiner's Answer, Appellants submit this Reply Brief. Appellants respectfully reaffirm their positions stated in the Appeal Brief and respectfully traverse the Examiner's bases for continuing the rejections of the instant claims found in the "Response to Argument" section of the Examiner's Answer. *See* Examiner's Answer at 6-12.

Appellants will not endeavor to address all of the Examiner's Answer's responses and positions, as it would render this Reply Brief substantially duplicative of the Appeal Brief.[1] Rather, Appellants will take this opportunity to: i) globally review the failings of the Examiner's purported *prima facie* case of obviousness; and ii) respond to the Examiner's Answer's conclusory and MPEP-contrary positions provided on "result effective variable" and "critical value."

A. The Examiner Fails to Present a *Prima Facie* Case of Obviouness.

In *KSR Int'l Co. v. Teleflex, Inc.*, the United States Supreme Court explained that, "a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art," but, additionally whether "the claim extends to what is obvious." *See KSR Int'l Co. v. Teleflex, Inc.*, 82 USPQ2d 1385, 1397 (2007). Expounding on its edict, the Supreme Court went on to opine that an obviousness determination is based upon a "proper application of *Graham*," including consideration of "secondary factors" that may weigh against an obviousness determination. *See KSR Int'l Co. v. Teleflex, Inc.*, 82 USPQ2d 1399 (citing *Graham v. John Deere Co. of Kansas City, et al.*, 383 U.S. 1, 148 U.S.P.Q. 459 (1966)). The "proper application of *Graham*" begins with a determination of whether the cited

[1] Specifically, this Reply Brief will not address the Examiner's responses directed to: (i) "improperly equated reaction conditions with product recovery conditions," Examiner's Answer at 9-10; (ii) "Araki's teaching away from the claimed feature," Examiner's Answer at 10-11; or (iii) "[p]resumption that water-free alcohols are used is a holding of Inherency based upon possibilities," Examiner's Answer at 12. In consideration of these Examiner responses, Appellants simply reaffirm and reassert their previous Appeal Brief positions on said matters.

prior art contains all the elements of the contested claims. *See Graham v. John Deere Co. of Kansas City*, 383 U.S. at 22 (an obviousness determination begins with a finding that "the prior art as a whole in one form or another contains all" the elements of the claimed invention.).

The Examiner's Answer includes four different arguments which allegedly show how the combination of *Lashier*, *Araki*, and *Kreischer* (hereinafter the "cited prior art") can be deemed to disclose all the elements of the instant claims, i.e., present a *prima facie* case of obviousness.

The Examiner's arguments are based on: i) the "implicit disclosure" of the cited prior art; ii) supplementing the cited prior art with "skilled artisan's knowledge;" iii) the "inherency" of claimed elements not expressly disclosed in the prior art; and (iv) the cited prior arts' disclosure of "general conditions" of the instant claims. As will be shown, the cited prior art cannot be read nor construed to contain all the elements of the instant claims.

1. Implicit Disclosure – No *Prima Facie* Case.

The Examiner states, "[i]n considering the disclosure of a reference, it is proper to take into account not only specific teachings of the references but also the inferences which one skilled in the art would reasonabl[y] be expected to draw therefrom." Examiner's Answer at 7. Although the Examiner does not provide a citation to the above-language, it is taken practically verbatim from MPEP Section 2144.01's discussion of "implicit disclosure." *See* MPEP § 2144.01 ("'[I]n considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom.' *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968)").

As such, the Examiner is apparently suggesting that the cited prior art "implicitly discloses" the claims' limitations "wherein the separation comprises a distillation comprising a reboiler and

material passed through the reboiler is maintained below about 190 °C" and the ability to "inhibit or limit the decomposition of the deactivated catalyst system during recovery of an olefin oligomerization product." *See* claims (all).

Appellants contend that the cited prior art contains no such implicit disclosure because the prior art, as acknowledged by the Examiner, does not disclose, discuss, and/or consider multiple claim elements. *See, e.g.,* Examiner's Answer at 7 ("Lashier, Araki and Kreischer do not teach the temperature of a reboiler in the separation of the olefin(s) product by distillation . . . ."); at 11 ("As previously set forth, the applied prior art references do not specify a reboiler temperature for the distillation process . . . ."); and again at 7 ("[N]o decomposition of the catalyst system and no corrosion of the process equipment was evident.").

In instances where prior art references have been found to possess an "implicit disclosure" effective to render a contested claim obvious, such prior art references have been determined to disclose claimed elements due to specific portions the prior arts' disclosures that could be juxtaposed with other specific portions of the prior arts' disclosure to provide a basis to find that all the elements to of the claimed invention could be found in the said prior art. *See, e.g.*, MPEP § 2144.01 (citing *In re Preda*, 159 USPQ at 344 ("A process for catalytically producing carbon disulfide by reacting sulfur vapor and methane in the presence of charcoal at a temperature of 'about 750-830°C' was found to be met by a reference which expressly taught the same process at 700°C because the reference recognized the possibility of using temperatures greater than 750°C. The reference disclosed that catalytic processes for converting methane with sulfur vapors into carbon disulfide at temperatures greater than 750°C (albeit without charcoal) was known, and that 700°C was 'much lower than had previously proved feasible.')"); *see also In re Lamberti*, 192

USPQ 278, 280 (CCPA 1976); *Ex parte Nawathe*; *Ex parte Symbol Technologies, Inc.*; *Ex parte Zybura*; and *Ex parte McCormack.*

As conceded by the Examiner, multiple elements of the instant claims cannot be found in the cited prior art cited. Additionally, the prior art references do not discuss or even consider reboiler temperature and/or decomposition of the deactivated catalyst system features of the instant claims. Therefore "the inferences which one skilled in the art would reasonably be expected to draw" from the cited prior art cannot meet the "implicit disclosure" standard as there are no specific portions of the prior art disclosure relating to reboiler temperature, decomposition of the deactivated catalyst system, and/or corrosion of the process equipment on which to juxtapose other specific portions of the prior art disclosure. *See* MPEP § 2144.01.

Based on the forgoing, the Examiner has failed to present a *prima facie* case of obviousness because the cited prior art fails to disclose all the elements of the instant claims. *See KSR Int'l Co. v. Teleflex, Inc.*, 82 USPQ2d 1385.

2. Skilled Artisan's Knowledge – No *Prima Facie* Case.

"The examiner maintains the position that the skilled artisan would know what reboiler temperatures could reasonably be used to effectively run the olefin(s) separation process by distillation without resulting in unwanted decomposition of the components." Examiner's Answer at 7.

The Examiner's attempt to take "official notice" of what a skilled artisan would know is wholly unsubstantiated and conclusory because the Examiner provides no citation or reference to support the above-comment.

As explained by the MPEP:

> **[i]t would not be appropriate for the examiner to take official notice of facts without citing a prior art reference where the facts asserted to be well known are not capable of instant and unquestionable demonstration as being well-known**. For example, assertions of technical facts in the areas of esoteric technology or specific knowledge of the prior art must always be supported by citation to some reference work recognized as standard in the pertinent art. *In re Ahlert*, 424 F.2d at 1091, 165 USPQ at 420-21. *See also In re Grose*, 592 F.2d 1161, 1167-68, 201 USPQ 57, 63 (CCPA 1979) ("[W]hen the PTO seeks to rely upon a chemical theory, in establishing a prima facie case of obviousness, it must provide evidentiary support for the existence and meaning of that theory."); *In re Eynde*, 480 F.2d 1364, 1370, 178 USPQ 470, 474 (CCPA 1973) ("[W]e reject the notion that judicial or administrative notice may be taken of the state of the art. The facts constituting the state of the art are normally subject to the possibility of rational disagreement among reasonable men and are not amenable to the taking of such notice.").

See MPEP § 2144.03 A (emphasis added).

Appellants contend that "what reboiler temperatures could reasonably be used to effectively run the olefin(s) separation process by distillation without resulting in unwanted decomposition of the components" are "not capable of instant and unquestionable demonstration as being well known." *See id.* ("[A]ssertions of . . . specific knowledge of the prior art must always be supported by citation to some reference work recognized as standard in the pertinent art.").

Further, the Examiner has ignored portions of *Araki* which teach passing material through the reboiler at a temperature greater than 190 °C (see discussion in Appeal Brief at pages 24-28). Since *Araki*, a reference on which the Examiner bases the obviousness rejection, uses temperatures to pass material through the reboiler outside that recited in independent claims 1, 18, 37, and 57, Appellants respectfully suggest that the Examiner's position that "the skilled artisan would know what reboiler temperatures could reasonably be used to effectively run the olefin(s) separation process by distillation without resulting in unwanted decomposition of the components" is unfounded.

Moreover, because the Examiner has not provided any other citation or reference to support such conjecture, the Examiner's attempt to take "official notice" of a skilled artisan's knowledge to raise the cited prior art to an obviousness level must be denied. *See In re Eynde*, 178 USPQ at 474 ("The facts constituting the state of the art are normally subject to the possibility of rational disagreement among reasonable men and are not amenable to the taking of such notice.")

Based on the forgoing, the Examiner has failed to present a *prima facie* case of obviousness because the cited prior art fails to disclose all the elements of the instant claims. *See KSR Int'l Co. v. Teleflex, Inc.*, 82 USPQ2d 1385.

3. Inherency – No *Prima Facie* Case.

The Examiner states, "since the process of the applied art references use the same catalyst system as the claims, the same method of deactivation of the catalyst system by the same alcohols of the claims, and the same product recovery step of distillation as the claims, the reboiler temperature of less than 190 °C **most likely** was also used since no decomposition of the catalyst system and no corrosion of the process equipment was evident." *See* Examiner's Answer at 7 (emphasis added).

In support of this position, and in an effort to remedy the acknowledged short-comings of the prior art, e.g., "since a reboiler temperature is not taught," *see* Examiner's Answer at 11, the Examiner states, "[a]s set forth in MPEP 2112, where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103 . . . [t]he MPEP continues to state that this *same rationale should also apply to* product, *apparatus, and process claims claimed in terms of function, property or characteristic*." *See* Examiner's Answer at 11 (emphasis in original).

Appellants contend that the Examiner's above-position is based on inherency. In fact, Appellants note that the Examiner's relied upon MPEP authority is expressly directed to those instances wherein "the prior art product seems to be identical except that the prior art is silent as to an **inherent characteristic**." *See* MPEP § 2112 III ("[W]here applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103 . . . [t]he MPEP continues to state that this same rationale should also apply to product, apparatus, and process claims claimed in terms of function, property or characteristic.") (emphasis added).

As was also explained in the Appeal Brief, to establish inherency:

> the extrinsic evidence "must make clear that the missing descriptive matter is **necessarily present** in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing **may** result from a given set of circumstances **is not sufficient**." *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999).

See MPEP § 2112 (IV) (emphasis added). The Examiner's position cannot meet the inherency standard because, as tacitly admitted by the Examiner, all the elements of the instant claims are not "necessarily present" in the Examiner's cited prior art. *See* Examiner's Answer at 10 (the Examiner reasons that the prior art's specific examples of temperatures above 190 °C does not limit the prior art to those high temperatures but that "any removal process may be used").

By acknowledging that the prior art's specific examples of temperature ranges outside the instantly claimed ranges did not mean that the prior art did not also suggest that "any removal process may be used," the Examiner explicitly indicates that the instantly claimed "wherein the separation comprises a distillation comprising a reboiler and material passed through the reboiler is

maintained below about 190 °C" is not "necessarily present" in the prior art. *See* MPEP § 2112 (IV); *see also* Examiner's Answer at 7 ("the reboiler temperature of less than 190 °C **most likely** was also used" – "most likely" is not "necessarily") (emphasis added). As such, the Examiner has self-proscribed any position based on inherency. *See id.*

Based on the forgoing, the Examiner has failed to present a *prima facie* case of obviousness because the cited prior art fails to disclose all the elements of the instant claims. *See KSR Int'l Co. v. Teleflex, Inc.*, 82 USPQ2d 1385.

4. General Conditions – No *Prima Facie* Case.

"The examiner maintains the position that where the general conditions of a claim are disclosed in the prior art it is not inventive to discover the optimum or workable ranges by routine experimentation." Examiner's Answer at 7 (relying on *In re Aller*, 105 USPQ 233, 235 (CCPA 1955)). Thus, the Examiner suggests that through "routine experimentation" the disclosures of cited prior art could be modified/optimized to meet all of the instant claims' elements. *See id.*

The Examiner's own admissions contradict the above-stated position. *See, e.g.,* Examiner's Answer at 7 ("Lashier, Araki and Kreischer do not teach the temperature of a reboiler in the separation of the olefin(s) product by distillation . . . ."); at 11 ("As previously set forth, the applied prior art references do not specify a reboiler temperature for the distillation process . . . ."); and again at 7 ("[N]o decomposition of the catalyst system and no corrosion of the process equipment was evident.").

Thus, the Examiner rightly acknowledges that the prior art does not disclose the "general conditions" of the instant claims, i.e., "wherein the separation comprises a distillation comprising a reboiler and material passed through the reboiler is maintained below about 190 °C" and

"inhibit[ing] or limit[ing] the decomposition of the deactivated catalyst system during recovery of an olefin oligomerization product." *See* claims (all).

In order to optimize a "general condition" via "routine experimentation," the "general condition" must be disclosed in order to be a condition which can be optimized. *See In re Aller*, 105 USPQ at 235. As such, because the "general conditions" of the instant claims are indisputably and admittedly absent from the cited prior art, the Examiner's attempted reliance on "routine experimentation" to "optimize" the cited prior art to an obviousness level must fail.

Based on the forgoing, the Examiner has failed to present a *prima facie* case of obviousness because the cited prior art fails to disclose all the elements of the instant claims. *See KSR Int'l Co. v. Teleflex, Inc.*, 82 USPQ2d 1385.

B. The Examiner's Consideration of Appellants' "Result Effective Variable" and "Critical Value" Rebuttal Arguments are Conclusory and Contrary to MPEP Standards.

In the Appeal Brief, Appellants presented evidence concerning the temperature of the reboiler as being both a "result effective variable" and a "critical value" to rebut the Final Office Action's rejections of the instant claims.[2] *See* Appeal Brief at 16-20. The evidence cited in the Appeal Brief was taken directly from the instant specification. *See id.*

As will be shown below, the Examiner response to said rebuttal evidence is improper as both conclusory and contrary to MPEP standards.

[2] Appellants wish to note that independent claims 1, 18, 37, and 57 recite that the separation "comprises a distillation comprising a reboiler and material passed through the reboiler is maintained below about 190 °C." The Examiner has tried to link the bottom temperature of the distillation column and/or the product recovery tank temperature in *Araki*'s Example 10 to the temperature of the material passing through the reboiler. *See* Examiner's Answer at page 10 bridging page 11. This is not the case. The bottom temperature of the distillation column and the product recovery tank temperature relate to different portions of the distillation apparatus.

1. Reboiler Temperature is a Result Effective Variable.

The Examiner's states, "appellants have not demonstrated that the reboiler temperature is a result effective variable for all possible alcohols which may be used in the claimed process . . . ." Examiner's Answer at 8. The Examiner's position is improper.

First of all, the Examiner's statement is conclusory because the Examiner provides no support for the suggestion Appellants must "demonstrate[]that the reboiler temperature is a result effective variable for all possible alcohols which may be used in the claimed process . . . ." *See KSR Int'l Co. v. Teleflex, Inc.*, 82 USPQ2d 1396 ("[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.").

Second, the Examiner's position is also contrary to the MPEP standard for consideration of rebuttal evidence. *See* MPEP § 2145 ("Consideration of Applicant's Rebuttal Arguments"). MPEP Section 2145 provides, "properties in one of a spectrum of common properties can be sufficient to rebut a prima facie case of obviousness." *See* MPEP § 2145 ("When considering whether proffered evidence is commensurate in scope with the claimed invention, Office personnel should not require the applicant to show unexpected results over the entire range of properties possessed by a chemical compound or composition."). Because the proffered rebuttal evidence reveals that varying the reboiler temperature has a resultant affect on the deactivated catalyst system formed when using 2-ethyl-1-hexanol, Appellants should not be required to show the reboiler temperature is a "result effective variable" for the deactivated catalyst system formed when utilizing alternative alcohol compounds or compositions. *See id.*

Based on the foregoing, Appellants' "result effective variable" argument should be considered to sufficiently rebut the Examiner's proffered *prima facie* case of obviousness.

2. The Reboiler Temperature is a Critical Value.

The Examiner states, "it is not clear that the temperature of below about 190 °C for all possible materials (different alcohols and mixtures thereof) which may be passed though the reboiler is a critical value." *See* Examiner's Answer at 9.

Again, the Examiner's statement is conclusory because the Examiner provides no support for the suggestion Appellants must prove that "the temperature of below about 190 °C for all possible materials (different alcohols and mixtures thereof) which may be passed though the reboiler is a critical value." *See KSR Int'l Co. v. Teleflex, Inc.*, 82 USPQ2d 1396 ("[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.").

Again, the Examiner's position is also contrary to the MPEP standard for consideration of rebuttal evidence. *See* MPEP § 2145 ("Consideration of Applicant's Rebuttal Arguments"). MPEP Section 2145 provides, "properties in one of a spectrum of common properties can be sufficient to rebut a prima facie case of obviousness." *See* MPEP § 2145 ("When considering whether proffered evidence is commensurate in scope with the claimed invention, Office personnel should not require the applicant to show unexpected results over the entire range of properties possessed by a chemical compound or composition."). Because the proffered rebuttal evidence reveals that the reboiler temperature below about 190 °C is a critical temperature for the deactivated catalyst system formed when using 2-ethyl-1-hexanol, Appellants should not be required to show the reboiler temperature is a "critical value" for the deactivated catalyst system formed when using alternative alcohol compounds or compositions. *See id.*

Based on the foregoing, Appellants' "critical value" argument should be considered to sufficiently rebut the Examiner's proffered *prima facie* case of obviousness.

CONCLUSION

In view of the above arguments the Appellants respectfully request that the final rejection of the claims be rescinded and the case advanced to issue. Should the Examiner feel that a telephone interview would advance prosecution of the instant application, Appellants invite the Examiner to call the attorneys of record.

The Commissioner is hereby authorized to charge payment of any further fees associated with any of the foregoing papers submitted herewith, or to credit any overpayment thereof, to Deposit Account No. 50-1515, of Conley Rose, P.C. of Texas.

Respectfully submitted,
CONLEY ROSE, P.C.

Date: 9/10/10

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V. CLAIMS APPENDIX

Listing of Claims:

1. A process to deactivate a halide-containing olefin oligomerization catalyst system and inhibit or limit the decomposition of the deactivated catalyst system during recovery of an olefin oligomerization product comprising the steps of:

   a) forming an intermediate stream by contacting an olefin oligomerization reactor effluent stream which comprises olefin product(s), catalyst system, and heavies with an alcohol that is soluble in any portion of the reactor effluent stream thereby deactivating the catalyst system; and

   b) separating the intermediate stream of step (a) into at least one product stream comprising the olefin oligomerization product and at least one heavies stream;

   wherein the separation comprises a distillation comprising a reboiler and material passed through the reboiler is maintained below about 190 °C, and

   wherein the catalyst system comprises a chromium source, a pyrrole-containing compound and an alkylaluminum compound and wherein the alcohol is added in an amount to effect a mole alcohol to mole aluminum ratio between about 2.5 and about 1.5.

2. (Canceled)

3. The process of claim 1 wherein the reactor effluent stream comprises olefin product(s); an olefin oligomerization catalyst system; an organic diluent; one or more mono-olefins; and polymer.

4. The process of claim 1 wherein the alcohol has a boiling point different from the olefin product in the reactor effluent stream.

5. The process of claim 1 wherein the alcohol has 6 or more carbon atoms per molecule.

6. The process of claim 1 wherein the olefin oligomerization catalyst system comprises a halogenated alkylaluminum compound.

7-9. (Canceled)

10. The process of claim 1 wherein material passed through the reboiler is maintained below about 175°C.

11. The process of claim 1 wherein the alcohol is selected from the group of 1-hexanol, 3-hexanol, 2-ethyl-1-hexanol, 3-octanol, 1-heptanol, 2-heptanol, 3-heptanol, 4-heptanol, 2-methyl-3-heptanol, 1-octanol, 2-octanol, 4-octanol, 7-methyl-2-decanol, 1-decanol, 2-decanol, 3-decanol, 4-decanol, 5-decanol, 2-ethyl-1-decanol, and mixtures thereof.

12. The process of claim 1 wherein the alcohol is selected from the group of diols and polyols.

13. The process of claim 1 wherein the distillation process includes at least two distillation stages.

14. (Canceled).

15. The process of claim 1 further comprising a step of minimizing water content of the alcohol before step (a) by contacting the alcohol with an adsorbent capable of adsorbing water.

16. The process of claim 15 wherein the an adsorbent capable of adsorbing water is selected from the group consisting of alumina, clinoptilolite, zeolite, molecular sieves, sodium-A bauxite, fuller's earth, and acid-activated bentonite.

17. The process of claim 1 wherein the olefin oligomerization product comprises one or more olefin trimers.

18. A process to deactivate a halide-containing olefin oligomerization catalyst system and inhibit or limit the decomposition of the deactivated catalyst system during recovery of an olefin oligomerization product comprising the steps of:

a) contacting an alcohol with an adsorbent capable of adsorbing water;

b) forming an intermediate stream by contacting an olefin oligomerization reactor effluent stream which comprises olefin product(s), catalyst system, and heavies with the alcohol thereby deactivating the catalyst system; and

c) separating the intermediate stream of step (b) into at least one olefin oligomerization product stream and at least one heavies stream;

wherein the separation comprises a distillation comprising a reboiler and material passed through the reboiler is maintained below about 190 °C, and

wherein said catalyst system comprises a chromium source, a pyrrole-containing compound and an alkylaluminum compound and wherein the alcohol is soluble in any portion of the reactor effluent stream.

19. (Canceled)

20. A process according to claim 18 wherein said reactor effluent stream comprises olefin product(s); the olefin oligomerization catalyst system; an organic diluent; one or more mono-olefins; and heavies.

21. A process according to claim 18 wherein the olefin oligomerization catalyst system comprises a halide compound and an alkylaluminum compound.

22. A process according to claim 1 wherein the olefin oligomerization catalyst system comprises a halide compound and a metal alkyl compound.

23. A process according to claim 1 wherein the olefin oligomerization catalyst system comprises a mixture of an alkylaluminum compound and a halogenated alkylaluminum compound.

24. A process according to claim 18 wherein the olefin oligomerization catalyst system comprises a halogenated alkylaluminum compound.

25. A process according to claim 18 wherein the olefin oligomerization catalyst system comprises a mixture of an alkylaluminum compound and a halogenated alkylaluminum compound.

26. The process of claim 6 wherein the halogenated alkylaluminum compound is diethylaluminum chloride.

27. The process of claim 24 wherein the halogenated alkylaluminum compound is diethylaluminum chloride.

28. The process of claim 18 wherein the alcohol has a boiling point different from the olefin product in the reactor effluent stream.

29. The process of claim 18 wherein the alcohol has 6 or more carbon atoms per molecule.

30. The process of claim 18 wherein the alcohol is selected from the group of 1-hexanol, 3-hexanol, 2-ethyl-1-hexanol, 3-octanol, 1-heptanol, 2-heptanol, 3-heptanol, 4-heptanol, 2-

methyl-3-heptanol, 1-octanol, 2-octanol, 4-octanol, 7-methyl-2-decanol, 1-decanol, 2-decanol, 3-decanol, 4-decanol, 5-decanol, 2-ethyl-1-decanol, and mixtures thereof.

31. The process of claim 18 wherein the alcohol is selected from the group of diols and polyols.

32-34. (Canceled)

35. The process of claim 18 wherein material passed through the reboiler is maintained below 175°C.

36. The process of claim 18 wherein the distillation process includes at least two distillation stages.

37. A process to deactivate a halide-containing olefin oligomerization catalyst system and inhibit or limit the decomposition of the deactivated catalyst system during recovery of an olefin oligomerization product comprising the steps of:

a) forming an intermediate stream by contacting an olefin oligomerization reactor effluent stream which comprises olefin product(s) and catalyst system with an alcohol that is soluble in any portion of the reactor effluent stream thereby deactivating the catalyst system; and

b) separating the intermediate stream of step (a) into at least one olefin oligomerization product stream;

wherein the separation of step (b) comprises a distillation comprising a reboiler and material passed through the reboiler is maintained below about 190°C.

38. (Canceled)

39. The process of claim 37 wherein material passed through the reboiler is maintained below about 175°C.

40. (Canceled)

41. The process of claim 37 wherein the distillation includes at least two distillation stages.

42. The process of claim 37 wherein the reactor effluent stream comprises olefin product(s); the olefin oligomerization catalyst system; an organic diluent; and one or more mono-olefins.

43. The process of claim 37 wherein the alcohol has a boiling point different from the olefin product in the reactor effluent stream.

44. The process of claim 37 wherein the alcohol has 6 or more carbon atoms per molecule.

45. The process of claim 37 wherein the alcohol is selected from the group of 1-hexanol, 3-hexanol, 2-ethyl-1-hexanol, 3-octanol, 1-heptanol, 2-heptanol, 3-heptanol, 4-heptanol, 2-methyl-3-heptanol, 1-octanol, 2-octanol, 4-octanol, 7-methyl-2-decanol, 1-decanol, 2-decanol, 3-decanol, 4-decanol, 5-decanol, 2-ethyl-1-decanol, and mixtures thereof.

46. The process of claim 37 wherein the alcohol is selected from the group of diols and polyols.

47. (Canceled)

48. The process of claim 37 further comprising a step of minimizing water content in the alcohol before step (a) by contacting the alcohol with an adsorbent capable of adsorbing water.

49. The process of claim 48 wherein the an adsorbent capable of adsorbing water is selected from the group consisting of alumina, clinoptilolite, zeolite, molecular sieves, sodium-A bauxite, fuller's earth, and acid-activated bentonite.

50. The process of claim 1 wherein the alkylaluminum compound is a mixture of triethylaluminum and diethyl aluminum chloride, the alcohol is 2-ethyl-1-hexanol, and the olefin product comprises 1-hexene.

51. The process of claim 18 wherein the alkylaluminum compound is a mixture of triethylaluminum and diethyl aluminum chloride, the alcohol is 2-ethyl-1-hexanol, and the olefin product comprises 1-hexene.

52. The process of claim 37 wherein the halide-containing olefin oligomerization catalyst system is a mixture of triethylaluminum and diethyl aluminum chloride, the alcohol is 2-ethyl-1-hexanol, and the olefin product comprises 1-hexene.

53. The process of 18 wherein the olefin oligomerization product stream comprises one or more olefin trimers.

54. The process of 37 wherein the olefin oligomerization product stream comprises one or more olefin trimers.

55. The process of claim 37 wherein the halide-containing olefin oligomerization catalyst system comprises a halogenated alkylaluminum compound.

56. The process of claim 55 wherein the halogenated alkylaluminum compound comprises diethylaluminum chloride.

57. A process to deactivate a halide-containing olefin oligomerization catalyst system and inhibit or limit the decomposition of the deactivated catalyst system during recovery of an olefin oligomerization product comprising the steps of:

a) forming an intermediate stream by contacting an olefin oligomerization reactor effluent stream which comprises olefin product(s), catalyst system, and heavies with an alcohol that is soluble in any portion of the reactor effluent stream thereby deactivating the catalyst system; and

b) separating the intermediate stream of step (a) into at least one olefin oligomerization product stream and at least one heavies stream;

wherein the separation of step (b) comprises a distillation comprising a reboiler and material passed through the reboiler is maintained below about 190 °C, and

wherein the catalyst system comprises active metal alkyl units, and

wherein the alcohol is present in an amount greater than 0.1 and less than about 1.8 equivalents per equivalent of active metal alkyl units.

58. A 1-hexene stream produced by the process of claim 1.

59. A 1-hexene stream produced by the process of claim 17.

60. A 1-hexene stream produced by the process of claim 37.

61. A 1-hexene stream produced by the process of claim 57.

62. A process of claim 1, wherein the separation comprises at least two distillation stages and material passed through each reboiler is maintained below about 190°C.

63. A process of claim 18, wherein the separation comprises at least two distillation stages and material passed through each reboiler is maintained below about 190°C.

64. A process of claim 37, wherein the separation comprises at least two distillation stages and material passed through each reboiler is maintained below about 190°C.

65. A process of claim 57, wherein the separation comprises at least two distillation stages and material passed through each reboiler is maintained below about 190°C.

VI. EVIDENCE APPENDIX

None.

VII. RELATED PROCEEDINGS APPENDIX

None.